

## TWO NEW SPECIES OF *PSORALEA* (FABACEAE) IN SOUTH AFRICA

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### ABSTRACT

Two new species of *Psoralea* L. are described. One of these, *P. implexa* C.H. Stirton, is recorded from the Mountain Fynbos vegetation type on Du Toit's Peak, near Worcester; and the second, *P. trullata* C.H. Stirton, from the southern Cape Mountains.

### UITREKSEL

### TWEE NUWE *PSORALEA* (FABACEAE) SOORTE IN SUID-AFRIKA

Twee nuwe *Psoralea*-soorte word beskryf. Die een, *P. implexa* C.H. Stirton is in Bergfynbos plantegroei op Du Toitspiek naby Worcester en die tweede, *P. trullata* C.H. Stirton, is op die suidelike Kaapse berge gevind.

**Key words:** *Psoralea*, sp. nov., Fabaceae, southern Cape, south western Cape.

### INTRODUCTION

In 1930 Miss H. M. L. Forbes published her revision of 49 species of *Psoralea* L. in southern Africa. Since that time many new areas have been opened up to exploration and it is therefore not surprising that some new species have been discovered.

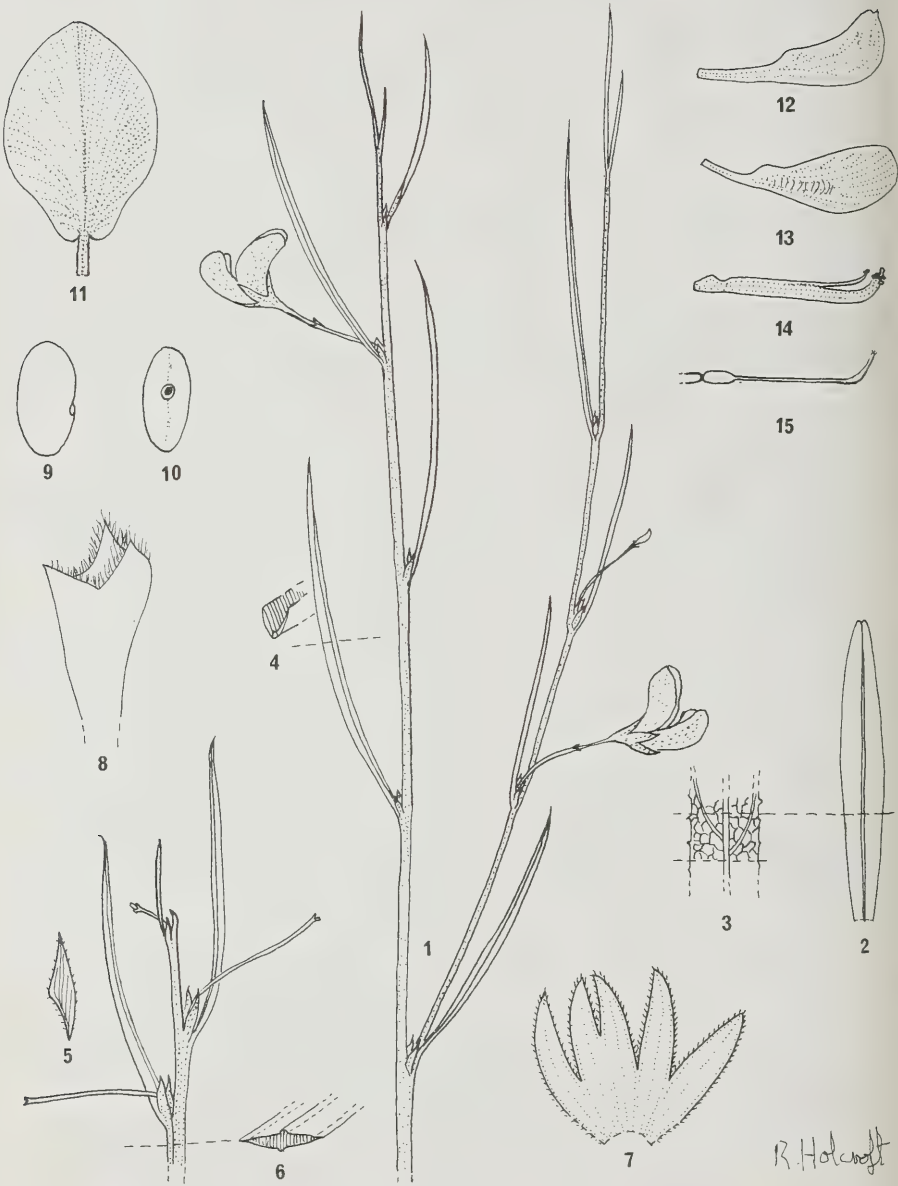
This paper is a tribute to Elsie Esterhuysen whose collections of *Psoraleoid* legumes in South Africa are of critical importance to our understanding of *Psoralea* and *Otholobium* C.H. Stirton. The two new species described here are rare and unusual representatives of the genus *Psoralea*.

***Psoralea implexa*** C.H. Stirton, sp. nov.; *P. trullatae* C.H. Stirton affinis sed habitu graminoso, caulibus complanatis, floribus solitariis latericiis vel salmoneis, vexillolate elliptico et cupula brevite trifida differt.

Planta perennis rhizomata acervis implexos formans. *Caulēs* complanate, angulati glabrescentes. *Folia* unifoliolata. *Foliola* linearioblonga vel falcata, apice basique acuminatis. *Flores* solitarii axillares 12 mm longi laterici vel

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*salmonei*. *Cupula* breviter trifida. *Calyx* accrescens. *Vexillum* late ellipticum. *Carina* alas superans apice rotundata.

*Type*: CAPE—3319 (Worcester): Delabat Ravine, NE ridge of Du Toit's Peak (-CA), 7/2/1975, *Esterhuysen* 33765 (NBG, holotype; BOL, NBG, PRE, isotypes).

Rhizomatous multi-stemmed perennial growing in tangled heaps, with some trailing branches up to 1,7 m long. *Stems* flattened, angled, glabrescent. *Leaves* unifoliolate. *Stipules* 3–6 mm long, 1–3 mm wide, fused at base, adnate to base of petiole, falcate; blade glabrous, glandular, margins papillose or hairy. *Petioles* 1 mm long, glabrous. *Leaflets* 35–60 mm long, 2–3 mm wide, linear-oblong to falcate, basal leaves shorter and up to 4 mm wide; glabrous, glandular; apex acuminate, base acuminate. *Inflorescence* reduced to a single flower, axillary, forming near the ends of lateral branches. *Flowers* 12 mm long, brick-red to salmon. *Cupulum* shortly trifid. *Calyx* 8 mm long; teeth equal, 8 mm long, 1,8–2,0 mm wide; vexillar lobes fused for three-quarters their length, incurving; tube 3 mm deep; lobes glabrous outside, finely ciliate on margins of the teeth and on inner face of teeth; accrescent in fruit. *Standard* 12 mm long, 8 mm wide, broadly elliptic, weakly auriculate, appendages absent; glabrous; apex convex, slightly beaked; claw 3 mm long. *Wing petals* 10 mm long, 3 mm wide at widest point, 1,5 mm wide below weak auricle; claw 3,5–4,0 mm long; sculpturing upper basal comprised of 8–12 irregular, reclined lamellae. *Keel blades* 9,0–9,5 mm long, 3,5 mm wide, rounded at apex and beaked below, shorter than the wing petals; claw 4 mm long. *Androecium* 9 mm long, 2 mm wide at base, split; vexillar stamen lightly fused for the middle part of its length. *Pistil* 9 mm long; ovary 1,5 mm long, glabrous except for a few glandular hairs on the sides; gynophore present, 1 mm long; height of curvature 2,5 mm; style glabrous, somewhat thickened before the point of flexure; stigma capitate, finely penicillate. *Fruit* 6 mm long, 4 mm wide, papery, reticulate. *Seed* brown black, 5 mm long, 3 mm wide (Fig. 1).

This species is so distinctive that I have no hesitation in describing it as new.

#### SPECIMENS EXAMINED

Type only, as above

FIG. 1.

*Psoralea implexa* (*Esterhuysen* 33765): 1. Flowering branch; 2. Leaflet; 3. Undersurface of leaflet; 4. Transverse section of leaflet; 5. Stipules; 6. Transverse section of stem; 7. Calyx; 8. Cupulum; 9. Lateral view of seed; 10. Hilar view of seed; 11. Standard; 12. Keel blade; 13. Wing petal. 14. Androecium. 15. Pistil. (1, 4,  $\times 1$ ; 2,  $\times 2$ ; 2, 3, 7, 9–15,  $\times 3$ ; 5, 6,  $\times 5$ ; 8,  $\times 8$ )

## DISTRIBUTION AND BIOLOGY

*Psoralea implexa* is a rare mountain endemic collected for the first and only time just six years ago (Fig. 2). It was found growing by Miss Elsie Esterhuysen at 650 m on steep open rocky stony slopes of kloofs with western and eastern aspects. Flowering takes place in early February. Nothing is known about its biology.

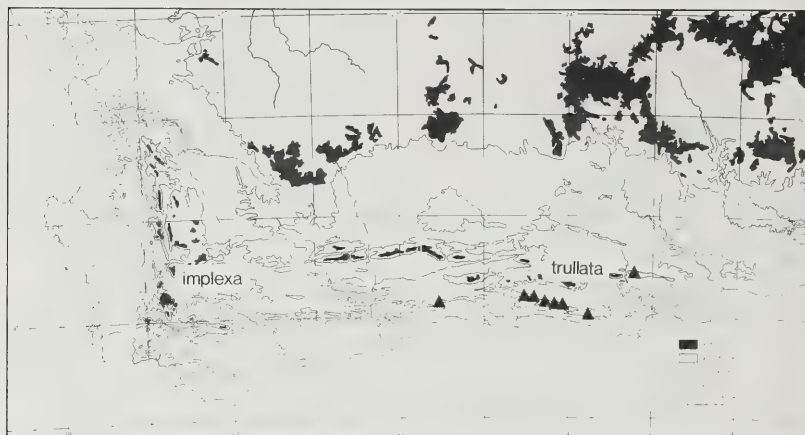


FIG. 2.

Known distribution of *Psoralea implexa* (●) and *P. trullata* (▲) in South Africa.

## DIAGNOSTIC FEATURES

Grass-like habit, flattened stems, solitary brick-red to salmon-coloured flowers, broadly elliptic standard and shortly trifid cupulum.

***Psoralea trullata*** C.H.Stirton, sp. nov.; *P. restioides* Eckl. & Zeyhr. et *P. implexae* C.H.Stirton atque *P. glaucinae* Harv. affinis sed vexillo trulliforme, cupulae dentibus longioribus angustioribus, carina dentibusque calycis alabastro valde attenuatis.

Suffrutex *implexa* multicaulis usque 300 mm alta. *Caules* usque 2 mm longi glabri manifeste glandulosi. *Folia* trifoliolata inferiores unifoliolata basales plani latique superne gradatim trifoliolata conduplicata angustioribus, foliola linearia vel linearioblonga basi cuneata apice acuminata. *Flores* solitarii axillares 10–12 mm longi purpureo-coerulei. *Cupula* 3–5 mm longa, tubo 1,5 mm longo, trifida, duobus dentibus interioribus 4,0–4,5 mm longis anguste triangularibus, dente exteriori rotundato quam interiores 4–5-plo bre-

viori. *Calyx* accrescens. *Vexillum* latissime triangulare vel trullatum. *Carina* manifeste attenuata alas prominente auriculatas valde superans.

*Type*: CAPE—without precise locality: Blaauboschbaai, *Fourcade* 2827 (PRE, holotype; STE, isotype).

Tangled multi-stemmed suffrutex, up to 300 mm tall. *Stems* as much as 2 m long, glabrous, ribbed, prominently glandular. *Leaves* trifoliolate, occasionally unifoliolate below. *Stipules* 5–7(10) mm long, adnate to the petiole, tightly clasping the stem, fused for three-quarters their length; teeth narrowly triangular, 2.0–4.5 mm long. *Petioles* 5–12 mm long. *Leaflets* 10–16 mm long, 0.5–2.0 mm wide; basal leaves flat and broader becoming conduplicate and narrower towards the apical regions; glabrous, linear to linear-oblong; base cuneate, apex acuminate; laterals equal to or somewhat shorter than the terminal leaflet. *Inflorescence* reduced to a single flower, axillary, occurring in the last 2–5 axils. *Flowers* 10–12 mm long, purplish-blue, subtended by two unequal bracts 2–3 mm long; pedicel 2–5 mm long. *Peduncle* 10–25 mm long; cupulum 3–5 mm long with 1.5 mm deep tube, trifid, inner pair of teeth 4.0–4.5 mm long, narrowly triangular, outer tooth rounded, 4–5 times shorter than the inner pair, 1.0–1.5 mm long. *Calyx* 12 mm long; upper four teeth equal, 8 mm long, keel tooth broader and 4 mm long, upcurving, vexillar lobes fused for two-thirds their length; tube 2.5–3.0 mm deep, ribbed; lobes glabrous inside and outside, ciliate along margins of the teeth, densely glandular, accrescent in fruit. *Standard* 13–14 mm long, 8 mm wide, very broadly triangular to trullate; claw 2.5 mm long; scarcely auriculate, appendages obscure, may be absent. *Wing petals* 14–15 mm long, 3 mm wide, claw 3 mm long; prominently auricled, thumb-like, 1.5 mm long. *Keel blades* 20–21 mm long, slender, narrowly beaked, exceeding the wing petals; claw 4 mm long. *Androecium* 6 mm long, vexillar stamen free. *Pistil* 6 mm long; ovary 2 mm long; gynophore present, 0.5 mm long; height of curvature 1.5–1.6 mm long; style glabrous, thickened at point of flexure; stigma capitate, penicillate. *Fruit* 5–6 mm long, 3 mm wide, black, paper-thin, broadly reticulate. *Seeds* 4 mm long, 2.5 mm wide, blackish-brown (Fig 3).

In the past this species has been referred to either *P. glaucina* Harv. or to *P. restioides* Eckl. & Zeyhr. It is easily separated from those species however by its prominent elongated buds, the trullate standard, and very distinctive keel.

#### SPECIMENS EXAMINED

CAPE—3322 (Oudtshoorn): Tolberg, top of Outeniqua Pass (-CD), 8/12/1962. *H. C. Taylor* 4469 (STE).





—3323 (Willowmore): de Hoek farm, Langkloofberge, 22/2/1945, *Fourcade* 6535 (BOL); Helpmekaar Peak (-DC), 28/1/1941, *Esterhuysen* 4604 (BOL); Formosa Peak, Tsitsikamma Mountains, 30/1/1941, *Esterhuysen* 4651 (BOL); Cradock Peak, Montagu Pass, 1/1940, *Stokoe s.n.* (SAM 54873); Camel Pile, Tsitsikamma Mountains (-CD), 12/1/1947, *Esterhuysen* 13573 (BOL); Tsitsikamma Mountains near Joubertina, 26/1/1950, *Esterhuysen* 16764 (BOL, PRE).

—3324 (Steytlerville): Witte Els Bosch Peak (-CD), 16/11/1941, *Esterhuysen* 6789 (BOL); Cockscomb Peak, Great Winterhoek Mountains (-DB), 3/3/1957, *Esterhuysen* 27144 (BOL).

Without precise locality: Blaauboschbaai, *Fourcade* 2827 (PRE, STE).

#### DISTRIBUTION AND BIOLOGY

*Psoralea trullata* is endemic to the southern Cape and is found growing on the Tsitsikamma, Langkloof, Outeniqua and Great Winterhoek Mountains (Fig. 2), between the altitudes of 1 100 and 1 600 m. Very little is known about the habitat preferred by this species except that it is associated with steep rocky slopes and ledges (*Esterhuysen* 27144), apparently on peaty soils overlying TMS rock (*Taylor* 4469). Flowering takes place between November and February.

#### DIAGNOSTIC FEATURES

Tangled herb; trullate standard; elongated flower bud; trifid unequally toothed cupulum; narrowly attenuated keel-blade exceeding the prominently auricled wing petals; accrescent calyx.

#### ACKNOWLEDGEMENTS

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FIG. 3.

*Psoralea trullata* (*Fourcade* 2827): 1. Flowering branch; 2. Calyx in fruit; 3. Calyx; 4. Cupulum; 5. Bracts subtending each flower in a cupulum; 6. Bud; 7. Standard; 8. Keel blade; 9. Wing petal; 10. Pistil; 11. Androecium. (1,  $\times$  1; 2, 3, 6,  $\times$  3; 7–11,  $\times$  4; 4,  $\times$  5; 5,  $\times$  8).